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CONVEYING PARTY DATA

Name	Execution Date
MARTIN ANDREW O'NEAL	03/01/2017
GUSTO AND APLOMB LIMITED	03/01/2017

RECEIVING PARTY DATA

Name:	DIGI.ME LIMITED
Street Address:	7 BOWER ROAD
Internal Address:	WRECCLESHAM, FARNHAM
City:	SURREY
State/Country:	ENGLAND
Postal Code:	GU10 4ST

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16494396

CORRESPONDENCE DATA

Fax Number: (312)321-4299

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Email: pchiovari@crowell.com, usassignments@crowell.com
Correspondent Name: KENT E. GENIN
Address Line 1: P.O. BOX 10395
Address Line 4: CHICAGO, ILLINOIS 60610

ATTORNEY DOCKET NUMBER:	520125.0000001
NAME OF SUBMITTER:	KENT E. GENIN
SIGNATURE:	/Kent E. Genin/
DATE SIGNED:	07/26/2022

Total Attachments: 15
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ASSIGNMENT

THIS ASSIGNMENT is made the 1st day of March 2017

BETWEEN

GUSTO AND APLOMB LIMITED, a UK limited company with a registered address of 83 Ducie Street, Manchester, M1 2JQ, United Kingdom (hereinafter referred to as "the Assignor") of the first part

AND

DIGI.ME LIMITED, a UK limited company with a registered address of 7 Bower Road, Wrecclesham, Farnham, Surrey GU10 4ST, United Kingdom and a business address of The Old Coach House, Grange Court, Grange Road, Tongham, Farnham, Surrey GU10 1DW, United Kingdom (hereinafter referred to as "the Assignee") of the second part.

WHEREAS:

1. Martin Andrew O'Neal is a Director of the Assignor (hereinafter referred to as "Mr O'Neal");

2. as part of his duties as a Director of the Assignor, Mr O'Neal contributed to the development of an invention entitled "Data processing apparatus and methods", a description of which is attached to this document as Annex 1 (hereinafter referred to as "the Invention");

3. further contributions to the Invention were developed by individuals of the Assignee;

4. under an agreement between the Assignor and the Assignee dated 1st September 2016 the Assignor and Assignee agreed that all intellectual property rights arising as a result of the services provided under that agreement would be the property of the Assignor; and

5. the Assignor and Assignee have agreed that Mr O'Neal's contribution to the Invention should be assigned to the Assignee.

NOW THIS ASSIGNMENT WITNESSETH AS FOLLOWS:

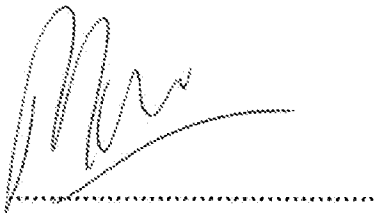
6. In pursuance of this Assignment and in consideration of the sum of £1 (one pound sterling) now paid by the Assignee to the Assignor, the receipt of which is hereby acknowledged, the Assignor hereby assigns to the Assignee with full title guarantee its entire

intellectual property rights in Mr O'Neal's contribution to the Invention and all rights and powers to make applications for letters patent in its own name in the United Kingdom and in any other country in the world in respect of the Invention, including the right to claim priority and all rights to take action in respect of infringements of those rights as well as all other intellectual property rights including but not limited to copyright in material produced as part of Mr O'Neal's contribution; and

7. the Assignor hereby agrees to execute and do at its expense all such documents, acts and things as may reasonably be required by the Assignee for the purposes of applying for and prosecuting and obtaining letters patent and other intellectual property rights and similar protection throughout the world in respect of Mr O'Neal's contribution to the Invention and for vesting in the same when obtained in the Assignee absolutely.

IN WITNESS WHEREOF the Assignor and the Assignee have hereunto set their hand by the duly authorised signatories the date first above written.

Signed by



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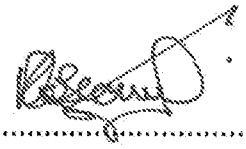
Martin Andrew O'Neal:

for and on behalf of

Gusto and Aplomb Limited

Date: 01 March 2017

Signed by



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Roger Julian Hipwood Goscomb:

for and on behalf of

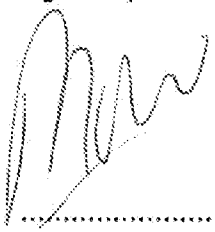
Digi.me Limited

Date: 01 March 2017

ANNEX 1

THIS is Annex 1 referred to in the assignment between Gusto and Aplomb Limited and Digi.Me Limited, dated the 1st day of March 2017.

Signed by



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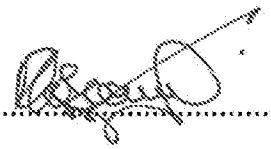
Martin Andrew O'Neal:

for and on behalf of

Gusto and Aplomb Limited

Date: 01 March 2017

Signed by



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Roger Julian Hipwood Goscomb:

for and on behalf of

Digi.me Limited

Date: 01 March 2017

Data processing apparatus and methods

FIELD OF THE INVENTION

The present invention relates to data processing apparatus and methods. In the commercial internet arena it is common for websites to collect information about their users. For example, many websites require users to register certain information before gaining full access to the site in question. This information may be basic contact information, or may be fuller demographic and personal information, depending on the site in question.

It is also common for users to wish to share their personal information as well as media content. For many users, there is a trade-off between sharing personal information in return for access to a service without payment. This is common in, for example, social networking sites or search engines where users may interact with members of their network or obtain useful search results free-of-charge with the processing and infrastructure being funded by advertising sales. The quality, and hence commercial value, of advertising sales is improved by maximising the potential relevance to a user by obtaining as much information as possible about the user and then selecting the best matching advertising accordingly.

However, the harvesting of user information is not without limit, as the use of personal information is heavily regulated in some jurisdictions, and some users are cautious or even fearful about revealing personal information to a site from which it may then be distributed further without explicit or informed consent being obtained from the user.

Recent media coverage has highlighted privacy concerns when data collected for one alleged purpose is bought or acquired by another enterprise and then used for a different

purpose either intentionally or unintentionally. It is therefore clear that there is a level of demand for more secure storage, control and tracking of the distribution of personal data.

SUMMARY OF THE INVENTION

A first aspect of the present invention is directed to a system comprising a data store, a data recipient and a data processing machine, the data store and the data recipient both being connectable to each other and to the data processing machine via a communications network, wherein the data store is adapted to selectively provide information to the data processing machine and to the data recipient on receipt of one or more suitable instructions from the data processing machine, and wherein the data processing machine is adapted to provide instructions to the data store based on a set of pre-determined rules, so that information is provided by the data store to the data recipient only when pre-determined conditions are met.

The data store may retain information pertaining to an individual user or a group of users. Such information may comprise personal details such as date of birth and gender and so on, as well as a wide range of information in different categories. For example a user may choose to include information relating to his or her health, or personally-generated content such as photos and messages and so on.

Selective provision of information to the data processing machine may be put into effect in a number of ways. An important factor is that the information which is provided by the data store to the data recipient comprises only information which has been explicitly approved for provision by a user. Thus, the user may control what information is provided and what information is kept confidential. The pre-determined rules are based on the user's preferences.

The data processing machine may interpret the pre-determined rules in order to provide corresponding instructions to the data store.

In one example, a connection between the data store and the data processing machine and between the data store and the data recipient may be formed only when a user instructs such a connection to be formed. Such a connection is temporary, being disconnected shortly after having been formed. This arrangement minimises any possibility of a connection being intercepted or interfered with, for example.

Thus, information is only provided to the data recipient in the manner and at the time determined by the user.

The data processing machine may be provided by a first service provider. The data store may be located on a machine owned or controlled or operated by the user. Alternatively the data store may be provided by a second service provider.

The data processing machine and/or the data store may be part of a distributed networked storage and processing system, i.e. they may be part of a cloud-based arrangement.

The data processing machine may remove information relating to the information, the rules and/or the instructions substantially immediately after a connection has been closed.

Thus, any records relating to such a transaction only exist temporarily. This reduces any risk of information relating to a transaction being intercepted or interfered with. Data relating to transaction logging may be retained.

The data store may be arranged so that on receipt of a suitable instruction it makes available only information related to that instruction. For example, a data store may include a large amount of information belonging to and relating to a user. The user may wish to share certain information with a data recipient but not all the information within the data store. The classification, volume and exact specification of this data may be subject to a data descriptor. Thus, an instruction may enable the data store to provide only information which the user decides to share at that point in time.

The instruction may take the form of a token which provides time-limited access to the information, meeting a definition of such a data descriptor, from the data store to the data recipient.

Such a token may be issued by the data processing machine to the data recipient on instruction by a user. The data recipient may then pass the token to the data store to authenticate its access. The token may also include data relating to the data recipient, so that only the data recipient may obtain the information from the data store.

This aspect of the invention also relates to a method for controlling the provision of information from a data store to a data recipient, wherein there is a data store, a data recipient

and a data processing machine, the data store and the data recipient both being connectable to each other and to the data processing machine via a communications network, comprising the steps of:

- forming a connection between the data store, the data recipient and the data processing machine;

- the data processing machine providing instructions to the data store, the instructions being based on a set of pre-determined rules;

- the data store interpreting the instructions and providing access to information held in the data store, the information being a sub-set of information held in the data store;

- passing the information to which access has been provided to the data recipient; and

- closing the connection.

The data store, the data recipient and the data processing machine will preferably be separated.

The method may further comprise the step of destroying any temporary copies of data and/or contextual data.

Steps taken as part of the first aspect of the present invention may be as follows:

1) the data recipient requesting a session key from the data processing machine;

2) the data processing machine issuing a session key to the data recipient;

3) using the session key to request information from the data store;

4) the data store interpreting the request for information and providing a list of available files according to the request for information;

5) the data recipient requesting one or more available files according to the list of available files and the request for information.

Encryption may be used to ensure that one or more of the request for information, the list of available files and the available files are transferred between the data store and the data recipient without also disclosing information to third parties.

Available files are not decrypted and re-encrypted before or during any transfer between the data store and the data recipient.

A second aspect of the present invention is directed to a data processing system comprising a processor and a data store, the processor being adapted to convert information into a pre-determined form for storage in the data store, wherein the processor is further adapted to categorise said information according to its content according to a set of pre-determined rules, and subsequently retrieve information from the data store, the data store comprising a data surface and a file storage means, wherein the data surface comprises a description of information stored in files in the file storage means.

By converting information into the pre-determined form, the information can be stored in a content neutral manner. That is, information can be categorised, stored and later processed so that the processing can take place without reference to the substance of the information stored. That way, selected sub-sets of the overall information can be manipulated or retrieved for further manipulation without the data processing system having regard to the information which is being processed.

For example, if retrieval from the data store of anonymised personal data is required then the processor can retrieve the relevant data from the data store without also retrieving data connecting the relevant data to information which could identify the person to whom the data relates.

The pre-determined form may comprise a set of types of information to be stored. Information to be stored may thus be stored, according to its type, within the data store. The information as such may be separated from data relating to the source of the information or its author.

The data surface may comprise data relating to the amount of information stored in each category within the data store. The data surface may further comprise further data describing aspects of the information within the data store. For example, the data surface may comprise data relating to the most recent version of each file stored in the data store.

The data surface may be a small fraction of the size (in terms of storage required) of that of the information held in the data store. This arrangement means that manipulation of the data surface requires less computer processing than an equivalent manipulation the information itself.

The data surface may contain further data to describe a data source and/or credentials of the user that were used to incrementally add data to the data store. This has the purpose of allowing the data store to define with full authority and necessary credentials how it may be kept up to date with time expanding (growing) external data sources that shall be periodically drawn into the data store by autonomous data processing apparatus.

The data surface is constructed in a manner that provides certain information about the content of the data store to facilitate faster or more specific processing of its contents without the need to read the data itself.

The information itself may be encrypted substantially at all times, so that the data processing system may convert, categorise and retrieve information without the information itself being revealed at any stage. Furthermore, the data surface and the information itself may be encrypted separately so that decryption of the data surface does not reveal any of the information itself. This adds a layer of information security beyond, for example, a known encrypted drive – in which either all of the information is available or none is available, depending on whether the drive itself is encrypted or decrypted.

When new information is to be stored, the data processing system of the second aspect may carry out the following steps:

1) identify and categorise information to be stored;

2) assign one or more identifier codes to the information;

3) place the information in a directory according to its identifier;

4) create a log entry in a record.

When information meeting a selected set of criteria is to be retrieved, the data processing system of the second aspect may carry out the following steps:

1) analyse a record to ascertain what information is stored;

2) according to the results of the analysis of the record, provide a list of available information which meets the selected set of criteria according to one or more identifier codes;

3) in reply to the list, receive a request for at least one piece of information;

4) provide the at least one piece of information;

5) create a log entry in the record.

The record may be part of the data surface. The information may be stored in the data store.

The log entries are important to provide an efficient storage, processing and retrieval system. The log entries enable the data surface to provide an accurate list of available information. In this way the data surface may also be able to provide further information when needed, for example when the information was most recently updated, when the information was most recently synchronised with a mirror or backup device, the total amount of information store of each category, the number of individual items of information, and the like.

Such an arrangement reduces processing demands and also allows for an efficient synchronisation of information between devices, if desired. This may be especially useful if, for example, a user wishes to keep control of his or her information on a device controlled by the user but also wishes to from time to time share some of this or her information with a third party.

The data processing system of the second aspect is also flexible enough to adapt to changing circumstances. For example, if a new type of information or category of information is developed then a new identifier code can be created for the categorisation of that information and subsequent storage.

The skilled reader will appreciate that the first and second aspects of the present invention may be put into effect in synergy with each other to provide an overall system which combines all of the advantages of both aspects.

CLAIMS

1. A system comprising a data store, a data recipient and a data processing machine, the data store and the data recipient both being connectable to each other and to the data processing machine via a communications network, wherein the data store is adapted to selectively provide information to the data processing machine and to the data recipient on receipt of one or more suitable instructions from the data processing machine, and wherein the data processing machine is adapted to provide instructions to the data store based on a set of pre-determined rules, so that information is provided by the data store to the data recipient only when pre-determined conditions are met.

2. A system according to claim 1, wherein the data processing machine interprets the pre-determined rules in order to provide corresponding instructions to the data store.

3. A system according to claim 1 or claim 2, wherein the connection between the data store and the data processing machine and between the data store and the data recipient is formed only when a user instructs such a connection to be formed and is temporary, being disconnected shortly after having been formed.

4. A system according to any preceding claim, wherein the data processing machine is provided by a first service provider and the data store is located on a machine owned or controlled or operated by the user.

5. A system according to any of claims 1 to 4, wherein the data processing machine is provided by a first service provider and the data store is provided by a second service provider.

6. A system according to any of claims 1 to 4, wherein the data processing machine and/or the data store are part of a distributed networked storage and processing system.

7. A system according to any preceding claim in which the data processing machine removes information relating to the information, the rules and/or the instructions substantially immediately after a connection has been closed.

8. A system according to any preceding claim, wherein the data store is arranged so that on receipt of a suitable instruction it makes available only information related to that instruction.

9. A system according to any preceding claim, wherein the instruction takes the form of a token meeting a definition of such a data descriptor which provides time-limited access to the information.

10. A method for controlling the provision of information from a data store to a data recipient, wherein there is a data store, a data recipient and a data processing machine, the data store and the data recipient both being connectable to each other and to the data processing machine via a communications network, comprising the steps of:

- forming a connection between the data store, the data recipient and the data processing machine;

- the data processing machine providing instructions to the data store, the instructions being based on a set of pre-determined rules;

- the data store interpreting the instructions and providing access to information held in the data store, the information being a sub-set of information held in the data store;

- passing the information to which access has been provided to the data recipient; and

- closing the connection.

11. A method according to claim 10, wherein data store, the data recipient and the data processing machine are separated.

12. A method according to claim 10 or claim 11 further comprising the step of destroying any temporary copies of data and/or contextual data.

13. A method according to any of claims 10 to 12, comprising the following steps:

- the data recipient requesting a session key from the data processing machine;

- the data processing machine issuing a session key to the data recipient;

- using the session key to request information from the data store;

- the data store interpreting the request for information and providing a list of available files according to the request for information;

- the data recipient requesting one or more available files according to the list of available files and the request for information.

14. A data processing system comprising a processor and a data store, the processor being adapted to convert information into a pre-determined form for storage in the data store, wherein the processor is further adapted to categorise said information according to its content according to a set of pre-determined rules, and subsequently retrieve information from the data store, the data store comprising a data surface and a file storage means, wherein the data surface comprises a description of information stored in files in the file storage means.

15. A data processing system according to claim 14, wherein comprise a set of types of information to be stored.

16. A data processing system according to claim 14 or claim 15, wherein the data surface comprises data relating to the amount of information stored in each category within the data store.

17. A data processing system according to any of claims 14 to 16, wherein the data surface further comprises further data describing aspects of the information within the data store.

18. A data processing system according to any of claims 14 to 17, wherein data surface may be a small fraction of the size (in terms of storage required) of that of the information held in the data store.

19. A data processing system according to any of claims 14 to 18, wherein the data surface contains further data to describe a data source and/or credentials of the user that were used to incrementally add data to the data store.

20. A data processing system according to any of claims 14 to 19, wherein the data surface is constructed in a manner that provides certain information about the content of the data store to facilitate faster or more specific processing of its contents without the need to read the data itself.

21. A method of storing new information comprising the following steps:

- identifying and categorising information to be stored;

- assigning one or more identifier codes to the information;

- placing the information in a directory according to its identifier;

- creating a log entry in a record.

22. A method of retrieving information comprising the following steps:

- analysing a record to ascertain what information is stored;

- according to the results of the analysis of the record, providing a list of available information which meets the selected set of criteria according to one or more identifier codes;

- in reply to the list, receiving a request for at least one piece of information;

- providing the at least one piece of information;

- creating a log entry in the record.

23. A method of storing new information in a data processing system according to any of claims 14 to 20 comprising the steps of claim 21.

24. A method of retrieving information from a data processing system according to any of claims 14 to 20 comprising the steps of claim 22.

25. A method according to claim 23 or 24, wherein the record is part of the data surface.

ABSTRACT

Data processing apparatus and methods

A system and method are disclosed for storing, processing and retrieving information. A data store, a data recipient and a data processing machine are provided, the data store and the data recipient both being connectable to each other and to the data processing machine via a communications network, and the data store being adapted to selectively provide information to the data processing machine and to the data recipient on receipt of one or more suitable instructions from the data processing machine, and the data processing machine being adapted to provide instructions to the data store based on a set of pre-determined rules, so that information is provided by the data store to the data recipient only when pre-determined conditions are met. Also disclosed is a data processing system comprising a processor and a data store, the processor being adapted to convert information into a pre-determined form for storage in the data store, wherein the processor is further adapted to categorise said information according to its content according to a set of pre-determined rules, and subsequently retrieve information from the data store, the data store comprising a data surface and a file storage means, wherein the data surface comprises a description of information stored in files in the file storage means.